Levels for As + DDT, + Cd are below the PRGs

RDT - need package up or down - use Cender Landfill + Ponds

*****CONFIDENTIAL PREDECISIONAL DOCUMENT*****

HRS SCREENING MEMO

Action: Follow up on the Zeneca work at the site
Decide what to do with the site

SUBMITTED TO:	EPA Region 9
PREPARED BY:	E & E START
DATE:	June 15, 1998
SITE:	Stauffer Chemical Company 1200 and 1415 South 47th Street Richmond, CA 94804
EPA ID NUMBER:	CAD 009123456
TDD:	09-9803-0003
PAN:	0291HRSSXX

The U.S. Environmental Protection Agency (EPA) tasked Ecology and Environment, Inc.'s (E & E's) Superfund Technical Assessment and Response Team (START) to evaluate the overall data quality for this site to assist in determining if the data are adequate for preparing an Hazard Ranking System (HRS) Documentation Record for including the site on the National Priorities List (NPL).

Site Summary

Site Location

The 75-acre Stauffer Chemical Company (Stauffer) site is located in a primarily industrial area with low income/minority residential neighborhoods nearby. The site is bordered on the south by a tidal marsh of San Francisco Bay. See attached Figure 3-1 Sample Location Map from the July 14, 1994 CERCLA Site Inspection (SI) report. The San Francisco Bay Trail, which is heavily used for recreation, runs through the marsh along the former Santa Fe railroad tracks.

Operational History

From 1906 to 1986, Stauffer manufactured, formulated, and bulk loaded agricultural industrial chemicals (e.g., manufactured sulfuric acid, aluminum sulfate, titanium trichlorate, Vapam, and Devrino; formulated Betasan, Captam, Eptam, Ordram, Ro-Neet, Tillan, and Trithion; and bulk loaded caustic soda, hydrochloric acid, tetrachloroethene, Sutan, and Silbond) at the site. Research and development of agricultural pesticides was also conducted at the Western Research Center and Pilot Plant on site. A California Extremely Hazardous Waste Permit, which was issued to Stauffer Chemical Company on August 15, 1983, lists DDT in the description of wastes and indicates "burial" as the proposed method of disposal.

The site is currently owned and operated by Zeneca (formerly known as ICI Americas, Inc.). Zeneca acquired the site in 1987. Since 1990, Zeneca has manufactured Vapam and formulated Devrinol and Ordram at the 1415 South 47th Street facility and conducted research and development of agricultural chemicals at the 1200 South 47th Street facility (Western Research Center).

Sources

Cinder Landfill: From about 1919 to 1963, pyrite ores were roasted at the site to produce sulfuric acid. The waste cinders that were generated by Stauffer's sulfuric acid manufacturing process were used as general fill material at the site or spread across the ground surface in the onsite Cinder Landfill. According to the 1991 Cinder Landfill Solid Waste Assessment Test (SWAT), pyrite ores are deposits of iron sulfide that can contain impurities such as arsenic, cadmium, copper, and zinc. The Cinder Landfill was closed in 1974 in accordance with California Regional Water Quality Control Board (RWQCB) Order No. 73-12. The area was graded, covered with clay and top soil, and planted with grass. Results of the 1992 CERCLA SI soil sampling event indicated the presence of the following hazardous substances in the Cinder Landfill at concentrations significantly above background: arsenic, cadmium, copper, mercury, zinc, a-BHC, b-BHC, Dieldrin, DDE, DDT, gamma-Chlordane, and Aroclor-1248.

Wastewater and Stormwater Treatment Ponds (i.e., Agricultural Yard Pond, Alum Mud Pond, Carbon Column Pond, Clarification Pond 1, Clarification Pond 2, Neutralization Pond, Evaporation Pond 1, and Evaporation Pond 2): The wastewater and stormwater treatment system was constructed by Stauffer and is currently operated by Zeneca. Originally, wastewater and stormwater flowed through the sedimentation ponds (Agricultural Yard Pond, Alum Mud Pond, Clarification Pond 1, Clarification Pond 2, and Neutralization Pond), to Evaporation Pond 1, to Evaporation Pond 2, and then to the tidal marsh adjacent to the site. In 1974, carbon adsorption columns were added to the system. In the late 1980s and early 1990s, ICI Americas acquired the site and completed an overhaul of the wastewater and stormwater treatment system under RWQCB oversight. One of the sedimentation ponds (the Agricultural Yard Pond) was closed and the other sedimentation ponds were relined. The Alum Mud Pond, Clarification Pond 1, and Clarification Pond 2 were converted to surge ponds to provide surge capacity for water during storm events. The water from Evaporation Pond 2, which was formerly discharged into the tidal marsh, is now transferred via pump and pipe to the Richmond publicly owned treatment works (POTW).

Results of the 1992 CERCLA SI sediment sampling event indicated the presence of the following hazardous substances in Evaporation Ponds 1 and 2 at concentrations significantly above background: arsenic, cadmium, copper, zinc, and DDT.

Regulatory Involvement

The RWQCB has overseen several activities conducted by Zeneca at the site, including installation of a groundwater intercept system to treat contaminated groundwater, removal of underground storage tanks, closure of the Cinder Landfill, completion of the SWAT for the Cinder Landfill, completion of a Toxic Pits Cleanup Act assessment for the wastewater treatment system ponds, and overhauling of the wastewater treatment system.

The RWQCB originally adopted waste discharge requirements for the Stauffer site in 1963. A National Pollutants Discharge Elimination System (NPDES) permit was issued in 1973. During heavy rains in February 1986, three carbon column bypass incidents occurred that resulted in pesticides being discharged into the tidal marsh at concentrations exceeding discharge requirements. The RWQCB informed Stauffer that they were in violation of their NPDES permit. A Cease and Desist Order was issued by the RWQCB, regarding the NPDES permit violation, in February 1988. The 1988 Cease and Desist Order was rescinded in June 1989 after ICI Americas overhauled the wastewater and storm water treatment system. Zeneca currently holds an NPDES

permit that allows for discharge of water from Evaporation Pond 2 into the tidal marsh if the capacity of the POTW is exceeded during a major storm event.

Check this out Ask Rachel about the status of Zeneca work.

On August 25, 1995, representatives from the EPA Region 9 (Betsy Curnow and Rachel Loftin), RWQCB, and Zeneca met to discuss implementation of a "core team concept". Betsy Curnow explained EPA's Deferral Policy that applies to NPL caliber sites with an HRS score of greater than or equal to 28.5; an interested, viable, cooperative PRP; and a state agency that wants to provide adequate oversight. She stated that EPA envisions RWQCB as the lead for surface water and groundwater assessment and clean-up activities, especially relating to ecological areas of concern. Zeneca stated that priority is being given to selection of a risk assessor with eco-risk experience for the core team. There is no further information in the CERCLA files regarding the "core team concept" in relation to the Stauffer site. Examination of contact logs attached to the May 6, 1997 EPA Region 9 Site Screening Checklist indicate that five RWQCB staff were contacted in March and May 1997 to obtain an update on RWQCB involvement with the site. At that time, oversight was continuing on an underground storage tank (UST) closure, but none of the staff contacted were aware of anyone at the agency that was working on the contamination associated with the tidal marsh. It does not appear that Zeneca was contacted. In the EPA Concurrence section of the checklist, EPA Region 9 signed off on designating the site as High Priority, EPA Lead.

Cinder Landfill is the worst problem. Is the landfill capped? (Has the landfill been removed)

HRS Factor Screening

The attached matrix identifies how deficiencies in data quality may affect the overall site score as presented in the scoresheet packet (dated December 3, 1992) that was prepared by URS for the CERCLA SI report (dated July 14, 1994). Each scenario in the matrix is based on the potential that a particular HRS factor may not be adequately supported by documentation. The matrix identifies the various permutations of these factors. None of the permutations presented in the Stauffer matrix cause a change in the surface water pathway score that was presented in the SI (i.e., 100).

Surface Water Pathway

Scenario 1: As scored by URS in the December 3, 1992 SI scoresheet packet, sediment sampling data from the 1992 SI sampling event was used to document an observed release of arsenic, cadmium, copper, mercury, zinc, a-BHC, b-BHC, Dieldrin, DDE, DDT, gamma-Chlordane, and Aroclor-1248 to the tidal marsh adjacent to the site. Attribution consists of 1992 SI soil and sediment sampling showing the presence of the aforementioned hazardous substances in two sources at the site (i.e., Cinder Landfill and Evaporation Ponds 1 and 2). The waste quantity factor value of 10,000 was based on sediment depth profiles completed for Evaporation Ponds 1 and 2 by ANATEC Laboratories in 1988. The human food chain targets factor category value of 48 was based on the assignment of Level II Concentrations to a fishery in the tidal marsh. The environmental threat targets factor category value of 725 was based on the assignment of Level II concentrations to wetlands (i.e., the portion of the tidal marsh within the boundaries of the observed release); the tidal marsh as being part of San Francisco Bay, which is an area identified under the Coastal Zone Management Act; and 11 endangered/threatened species associated with the tidal marsh.

- **Data Quality** — Some of the analytical data that are presented in the SI scoresheet packet to support the observed release are qualified. However, examination of the validated data packets indicates that there are sufficient unqualified and converted qualified data to support the observed release and attribution presented in Scenario 1.

Should the "J" data ± correction be used versus "J" data c/o correction. Answer Yes. ref the Fact Sheet

River category is correct

- **Waste Characteristics** — In the SI scoresheet packet, the toxicity/persistence/ bioaccumulation factor values for the human food chain threat and environmental threat are not correct. A persistence value of 1 was used for mercury. According to the June 1996 Superfund Chemical Data Matrix (SCDM), the lake persistence value for mercury is 1 and the river persistence value for mercury is 0.4. Since, according to HRS Table 4-10, coastal tidal waters and oceans are included in the rivers category, a persistence value of 0.4 should be used for mercury. Making these revisions, however, does not change the waste characteristics factor category values for the human food chain threat or environmental threat.

Do we have to document mercury on site? Linking substance to the PRP is not required. Link to the activity at the site. Link to the source at the site.

- **Mercury Attribution** — In the SI scoresheet packet, mercury was used to assign the toxicity/persistence/bioaccumulation factor values for the human food chain threat and environmental threat. Although mercury was detected at concentrations significantly above background in all three samples collected from the Cinder Landfill during the 1992 SI sampling event, there is no information in the CERCLA files to link mercury with on-site operations. (Mercury was attributable to operations at the Stauffer Domingues site, so it may be possible here). Arsenic, cadmium, copper, zinc, and DDT were also detected at concentrations significantly above background in samples collected from the Cinder Landfill during the 1992 SI sampling event. There is information in the CERCLA files to link these hazardous substances to on-site operations. Arsenic, cadmium, copper, and zinc are impurities typically found in pyrite ore, and DDT is listed in a 1983 California Extremely Hazardous Waste Permit that was issued to Stauffer. If DDT is used, instead of mercury, to assign the toxicity/persistence/bioaccumulation factor values for the human food chain threat and environmental threat, the surface water pathway still scores 100.

Permitted sources can be used in the HRS evaluation.

California black rail resides at the site. Swims in evaporation pond #2

- **Treatment Pond Permits** — In the SI scoresheet packet, the waste quantity factor value of 10,000 was based on the volumes of the Cinder Landfill and Wastewater and Storm-water Treatment Ponds. If the ponds are not considered sources, due to their regulation under a NPDES permit, the waste quantity factor value is reduced to 100. Making this revision, however, does not change the surface water pathway score of 100.

Get photographs of boat

Photos may be available of Latician fishermen

Get Kenyon's log book on the field activities from URS Karen will call Des Garner.

- **Tidal Marsh Fishery** — In the SI scoresheet packet, the food chain individual factor was assigned a value of 45 and the Level II concentrations factor value was assigned a value of 3 based on the assumption that the tidal marsh is a fishery. However, the reference that is cited in the SI report for fishermen having been observed fishing within the sloughs of the tidal marsh does not contain any information regarding this observation. Revising the food chain individual factor value to 20 and the Level II concentrations factor value to 0, however, does not change the Surface Water Pathway score of 100. John Zweiacki

Consider using the Shinook Salmon + CA Black rail. Look only at the spring run for the salmon

- **Environmental Targets** — In the SI scoresheet packet, the environmental threat targets factor category value of 725 was based on the assignment of Level II Concentrations to wetlands (i.e., the portion of the tidal marsh within the boundaries of the observed release); the tidal marsh as being part of San Francisco Bay, which is an area identified under the Coastal Zone Management Act; and 11 endangered/threatened species associated with the tidal marsh. There is sufficient information in the CERCLA files to support the presence of at least 0.1 mile of wetland frontage (an assigned value of 25 from HRS Table 4-24) and a portion of a Coastal Zone Management Act area (an assigned value of 100 from HRS Table 4-23) within the boundaries of the observed release. However, the version of the Natural Diversity Database (NDDB) printout that is in the CERCLA files does not provide information on the specific locations of habitats for the 11 endangered/threatened species that are listed as being associated with the tidal marsh in

Wetlands = 50 pts

this is not enough

the SI scoresheet packet. In the SI report, it is stated that, during the October 23, 1992 SI sampling event, a California black rail was observed in Evaporation Pond 1 by a URS representative and an EPA ecologist. However, the reference that is cited appears to be irrelevant to this statement ("Williams, Matthew, Screening Site Inspection Reassessment of the Richmond Field Station, February 16, 1990"). Eliminating the 11 endangered/threatened species reduces the environmental threat level II concentrations factor value from 725 to 125, but does not change the environmental threat score of 60 or the surface water pathway score of 100.

Most Likely Scenario

All eight scenarios yield a surface water pathway score of 100. Even when all the HRS factor values are based on information currently available in the CERCLA files (Scenario 8), the surface water pathway still scores 100. Additional data collection efforts that would not change the score, but would strengthen it, include reviewing industry literature and information on other Stauffer sites to link mercury to onsite operations; contacting various agency personnel, reviewing CERCLA documents for nearby sites, and obtaining a more detailed printout of the NDDB to document the presence of a fishery and endangered/threatened species in the tidal marsh; and making a determination that the Wastewater and Stormwater Treatment Ponds can be considered sources for the HRS evaluation, even though they have been regulated by NPDES permits since 1973.

Other Pathways

In the SI scoresheet packet, the groundwater pathway was evaluated, but not quantified, because, although groundwater beneath the site is contaminated with metals and pesticides attributable to the site, the Richmond area obtains its drinking water from imported surface water supplied by the East Bay Municipal Utility District.

In the SI scoresheet packet, the soil exposure pathway was quantified and yielded a score 63.72. However, since the surface water pathway drives the overall site score, data quality for the soil exposure pathway was not evaluated for this HRS Screening Memo. As presented in the SI scoresheet packet, the site score is 50 when only the surface water pathway is considered. When both the surface water pathway and soil exposure pathway are considered, the site score is 59.29. A cursory review of the SI scoresheet packet indicates that the Soil Exposure Pathway score of 63.72 is driven by the assumed presence of six endangered/threatened species within the area of observed contamination that is defined by the three samples that were collected from the Cinder Landfill during the 1992 SI sampling event. As discussed above in Scenario 7, there is not adequate information in the CERCLA files to document the presence of these species at the site.

The air pathway was evaluated, but not quantified, because ambient air sampling and meteorological monitoring have not been conducted in the vicinity of the Stauffer site. In addition, hazardous substance sources at the site consist predominantly of wastewater and stormwater treatment ponds that are filled with water and a cinder landfill that was covered with clay during closure in 1974.

Can also count the workers at the Cinder Landfill

HRS Screening Analysis

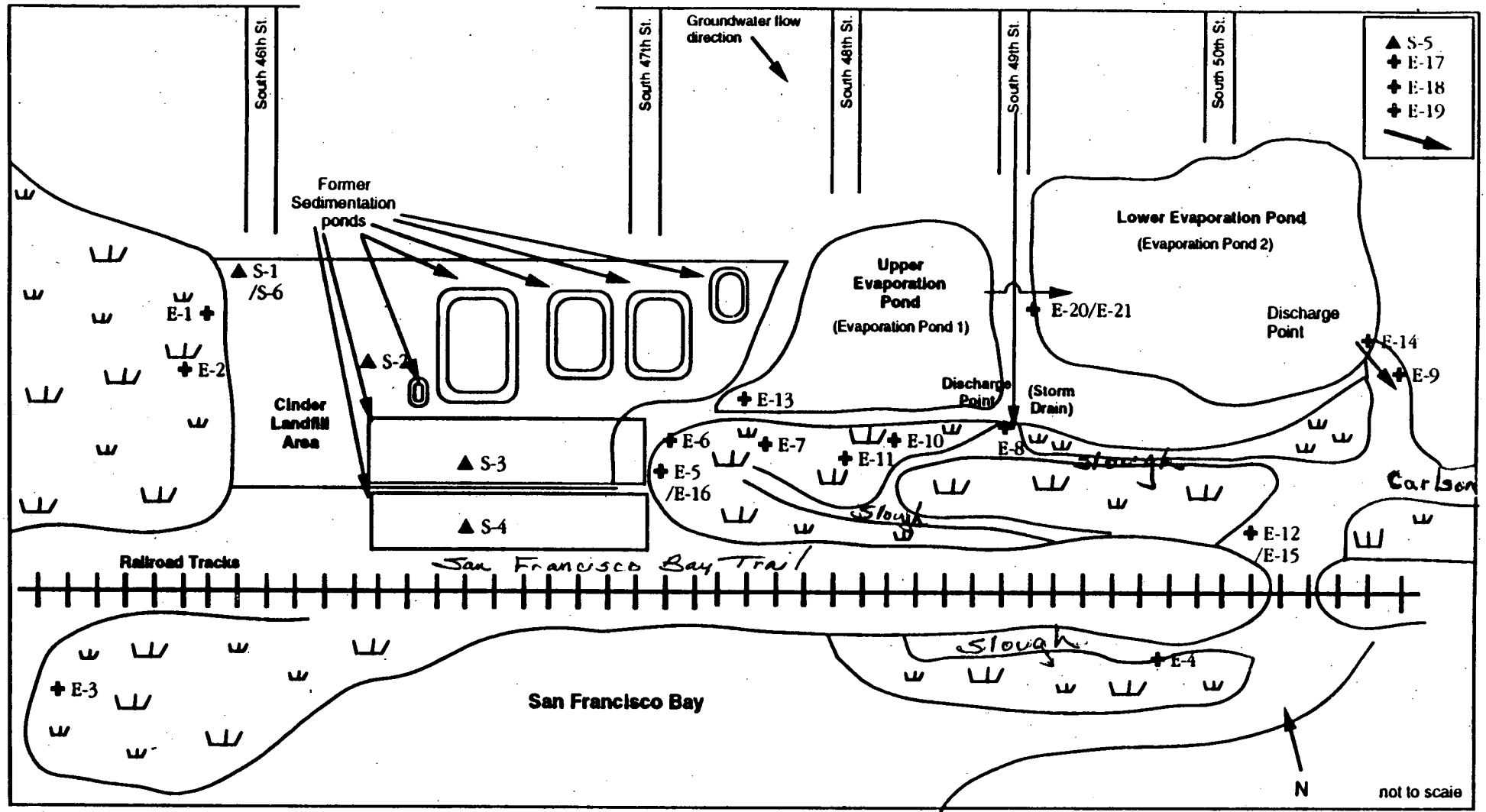
Stauffer Chemical Company
1200 and 1415 South 47th Street
Richmond, Contra Costa County, CA
CAD 009123456

Factor/ Scenario	Likelihood of Release	Waste Character-istics	Targets	Surface Water Pathway Score	HRS Site Score
1. As scored by URS for the SI (12/3/92):	550	DW Threat: 1.0E4x1.0E4 100 HFC Threat: 5.0E8x1.0E4 1,000 Env. Threat: 5.0E8x1.0E4 1,000	DW Threat: 5 HFCThreat: 48.0031 Env.Threat: 725	(5,156.68) 100	50
2. Using only unqualified and converted qualified data to support the observed release presented in the SI scoresheet packet.	Same as #1	Same as #1	Same as #1	Same as #1	Same as #1
3. Revised persistence value from SCDM for mercury.	Same as #1	DW Threat: 1.0E4x1.0E4 100 HFC Threat: 2.0E8x1.0E4 1,000 Env. Threat: 2.0E8x1.0E4 1,000	Same as #1	Same as #1	Same as #1
X 4. Toxicity/persistence/bioaccumulation factor values based on DDT, instead of mercury. Can score w/o mercury	Same as #1	DW Threat: 1.0E4x1.0E4 100 HFC Threat: 5.0E7x1.0E4 560 Env. Threat: 5.0E8x1.0E4 1,000	Same as #1	(5,015.87) 100	Same as #1
X 5. Waste Quantity factor value based solely on the Cinder Landfill. Can list landfill as the Former Stauffer Cinder Landfill.	Same as #1	DW Threat: 1.0E4x1.0E2 32 HFC Threat: 2.0E8x1.0E2 320 Env. Threat: 2.0E8x1.0E2 320	Same as #1	(1,650.15) 100	Same as #1
6. Food chain individual factor value of 20 and Food chain Level II Concentrations factor value of 0 due to lack of documentation to identify the tidal marsh as a fishery.	Same as #1	Same as #1	DW Threat: 5 HFCThreat: 20.0031 Env.Threat: 725	(4,970.01) 100	Same as #1

HRS Screening Analysis (cont'd)

Stauffer Chemical Company
1200 and 1415 South 47th Street
Richmond, Contra Costa County, CA
CAD 009123456

Factor/ Scenario	Likelihood of Release	Waste Character-istics	Targets	Surface Water Pathway Score	HRS Site Score
7. Environmental threat Level II concentrations factor value reduced to 125 due to lack of documentation to associate 11 endangered/threatened species with the tidal marsh.	Same as #1	Same as #1	DW Threat: 5 HFCThreat: 48.0031 Env.Threat: 125	(1,156.66) 100	Same as #1
8. Toxicity/persistence/bioaccumulation factor values based on DDT (Scenario #4). Waste quantity factor value based solely on the Cinder Landfill (Scenario #5). Food chain individual factor value of 20 and food chain Level II concentrations factor value of 0 (Scenario #6). Environmental threat Level II concentrations factor value of 125 (Scenario #7).	Same as #1	DW Threat: 1.0E4x1.0E2 32 HFC Threat: 5.0E7x1.0E2 180 Env. Threat: 5.0E8x1.0E2 320	DW Threat: 5 HFCThreat: 20.0031 Env.Threat: 125	(291.74) 100	Same as #1



URS Consultants
100 California Street
San Francisco, Ca 94111
August 17, 1992

Figure 3-1
Sample Location Map
Stauffer Chemical Company
Richmond, California

Key
- E- = Sediment Sample Location
- S- = Soil Sample Location
- = Wetland Area

Table 1
October 1992 SI Sediment Sample Results
Documenting an Observed Release to Surface Water
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for an observed release)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
E-17 (BG)	Hoffman Marsh (0.5 mile so. of site)	14.6J	2.4U	87.2J	0.88	270J	4U	4U	0.8LJ	0.8LJ	5LJ	6LJ	2LNJ	4LNJ	80U
E-18 (BG)	Hoffman Marsh	17	3.3U	106	1.3J	286	6U	6U	6U	11U	4LNJ	5LJ	11U	2LJ	110U
E-1	Stauffer tidal marsh	**496**	**4.1**	315J	**10.9**	957J	**57**	**16**	**11**	5U	**44**	**18**	**150**	6NJ	**160**
E-2	"	**749**	**3.9**	239J	**5.8**	863J	**300**	**66**	**14**	6U	87NJ	**64**	**370**	11NJ	58U
E-3	"	**96.3**	2.0U	169J	**5.3**	215J	4U	4U	4U	7U	12NJ	11	8	3LNJ	**140**
E-4	"	20.3J	2.1U	88.7J	O.89	231J	4U	4U	4U	3LNJ	14NJ	10	4LNJ	5NJ	120J
E-5	"	104J	3.0U	649J/ 1.1=**590**	1.9	431J	5U	5U	5U	10U	**140**	**24**	**130**	**9**	97U
E-6	"	20.6	2.6UJ	12.8UJ	0.26U	31.6J	**200**	**46**	**12**	2LNJ	**35**	5LNJ	**23**	0.9LNJ	70U
E-7	"	**146**	2.0U	34.4	0.88	150J	**5**	2LJ	1LNJ	7U	**180**	**21**	**120**	2LNJ	67U
E-8	"	**294**	3.0	600J/ 1.1=**546**	**4.5**	1,250J/ 1.3=**962**	5U	5U	5U	**37**	**170**	**64**	**140**	**13**	92U
E-9	"	27.3J	4.2U	149J	1.2	354J	6U	6U	6U	12U	**80**	**30**	37NJ	7NJ	120U
E-10	"	**1,660**	6.7U	189J	1.6	348J	3LJ	9LNJ	11U	21U	78NJ	43NJ	**190**	6LNJ	210U
E-11	"	**177**	4.7U	170J	0.80	457J	7U	7LJ	7U	14U	**58**	**26**	14LNJ	6LJ	140U
E-12	"	32.1J	2.0U	111J	0.83	286J	3U	3U	3U	9NJ	**46**	**19**	**7**	9NJ	62U

Table 1 (cont'd)
October 1992 SI Sediment Sample Results
Documenting an Observed Release to Surface Water
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for an observed release)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
E-15	"	12.3	2.0U	116	3.0J	296	3U	3U	3U	10NJ	**50**	**36**	**54**	**14**	63U
E-16	"	60.1J	3.1U	816J/ 1.1=**742**	1.6	440J	5U	5U	5U	5U	**130**	**23**	**120**	**7**	97U

Table 2
October 1992 SI Soil Sample Results
Documenting the Presence of Hazardous Substances in the Cinder Landfill
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for significantly above background)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (µg/kg)	b-BHC (µg/kg)	Lindane (µg/kg)	Dieldrin (µg/kg)	DDD (µg/kg)	DDE (µg/kg	DDT (µg/kg)	gamma-chlordane (µg/kg)	Aroclor-1248 (µg/kg)
S-5 (BG)	Adjacent to Hoffman Marsh (0.5 mile so. of site)	2.2LJ	1.2U	26.2Jx 1.1=28.8	0.12U	78.7Jx 1.3=102	2U	2U	2U	4U	4U	4U	4U	2U	39U
S-1	Cinder Landfill	**294**	**5.3**	389J/ 1.1=**354**	**7.8**	1,050J/ 1.3=**808**	**91**	**20**	6NJ	**52**	58NJ	**40**	**490**	29NJ	590J/ 10=**59**
S-2	"	**145**	**15.5**	1,310J/ 1.1=**1,191**	**30.2**	2,240J/ 1.3=**1,723**	**150**	35J/ 10=**3.5**	27NJ	32NJ	170NJ	**410**	**1,800**	**34**	**640**
S-6	"	**216**	**4.1**	319J/ 1.1=**290**	**9.9**	827J/ 1.3=**636**	**77**	**19**	6NJ	**46**	60NJ	**40**	**430**	**28**	570J/ 10=**57**

none are above the PRG (industrial)

none are above the PRG of 13,000 ug/kg

Table 3
October and November 1992 SI Sediment Sample Results
Documenting the Presence of Hazardous Substances in Evaporation Ponds 1 and 2
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for significantly above background)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
E-19 (BG)	Carlson Creek (0.5 mile NE of site)	6.3	1.6U	11.3	0.16UJ	49.2	2U	2U	2U	2LNJ	2LNJ	1LNJ	5U	1LJ	46U
E-13	Evap Pond 1	12.6	**3.6**	**942**	1.7J	**490**	38NJ	20NJ	4U	14	76	31	**74**	4U	75U
E-14	Evap Pond 2	5	1.4U	23.5	0.43J	60.8	2UJ	2UJ	2UJ	4UJ	1LJ	2LJ	4UJ	2UJ	42UJ
E-20	Evap Pond 2	**67**	14.6Jx l=**14.6**	**1,930**	2.8	**5,490**	2U	2U	2U	33U	150	86	33NJ	6LJ	33U
E-21	Evap Pond 2	**52.6**	8.2UJ	**104**	2.3	**4820**	2U	2U	2U	14LJ	180	120	32LNJ	10LJ	33U

Table 1
October 1992 SI Sediment Sample Results
Documenting an Observed Release to Surface Water
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for an observed release)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
E-17 (BG)	Hoffman Marsh (0.5 mile so. of site)	14.6J	2.4U	87.2J	0.88	270J	4U	4U	0.8LJ	0.8LJ	5LJ	6LJ	2LNJ	4LNJ	80U
E-18 (BG)	Hoffman Marsh	17	3.3U	106	1.3J	286	6U	6U	6U	11U	4LNJ	5LJ	11U	2LJ	110U
E-1	Stauffer tidal marsh	**496**	**4.1**	315J	**10.9**	957J	**57**	**16**	**11**	5U	**44**	**18**	**150**	6NJ	**160**
E-2	"	**749**	**3.9**	239J	**5.8**	863J	**300**	**66**	**14**	6U	87NJ	**64**	**370**	11NJ	58U
E-3	"	**96.3**	2.0U	169J	**5.3**	215J	4U	4U	4U	7U	12NJ	11	8	3LNJ	**140**
E-4	"	20.3J	2.1U	88.7J	O.89	231J	4U	4U	4U	3LNJ	14NJ	10	4LNJ	5NJ	120J
E-5	"	104J	3.0U	649J/ 1.1=**590**	1.9	431J	5U	5U	5U	10U	**140**	**24**	**130**	**9**	97U
E-6	"	20.6	2.6UJ	12.8UJ	0.26U	31.6J	**200**	**46**	**12**	2LNJ	**35**	5LNJ	**23**	0.9LNJ	70U
E-7	"	**146**	2.0U	34.4	0.88	150J	**5**	2LJ	1LNJ	7U	**180**	**21**	**120**	2LNJ	67U
E-8	"	**294**	3.0	600J/ 1.1=**546**	**4.5**	1,250J/ 1.3=**962**	5U	5U	5U	**37**	**170**	**64**	**140**	**13**	92U
E-9	"	27.3J	4.2U	149J	1.2	354J	6U	6U	6U	12U	**80**	**30**	37NJ	7NJ	120U
E-10	"	**1,660**	6.7U	189J	1.6	348J	3LJ	9LNJ	11U	21U	78NJ	43NJ	**190**	6LNJ	210U
E-11	"	**177**	4.7U	170J	0.80	457J	7U	7LJ	7U	14U	**58**	**26**	14LNJ	6LJ	140U
E-12	"	32.1J	2.0U	111J	0.83	286J	3U	3U	3U	9NJ	**46**	**19**	**7**	9NJ	62U

Table 1 (cont'd)
October 1992 SI Sediment Sample Results
Documenting an Observed Release to Surface Water
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for an observed release)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
E-15	"	12.3	2.0U	116	3.0J	296	3U	3U	3U	10NJ	**50**	**36**	**54**	**14**	63U
E-16	"	60.1J	3.1U	816J/ 1.1=**742**	1.6	440J	5U	5U	5U	5U	**130**	**23**	**120**	**7**	97U

Table 2
October 1992 SI Soil Sample Results
Documenting the Presence of Hazardous Substances in the Cinder Landfill
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for significantly above background)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
S-5 (BG)	Adjacent to Hoffman Marsh (0.5 mile so. of site)	2.2LJ	1.2U	26.2Jx 1.1=28.8	0.12U	78.7Jx 1.3=102	2U	2U	2U	4U	4U	4U	4U	2U	39U
S-1	Cinder Landfill	**294**	**5.3**	389J/ 1.1=**354**	**7.8**	1,050J/ 1.3=**808**	**91**	**20**	6NJ	**52**	58NJ	**40**	**490**	29NJ	590J/ 10=**59**
S-2	"	**145**	**15.5**	1,310J/ 1.1=**1,191**	**30.2**	2,240J/ 1.3=**1,723**	**150**	35J/ 10=**3.5**	27NJ	32NJ	170NJ	**410**	**1,800**	**34**	**640**
S-6	"	**216**	**4.1**	319J/ 1.1=**290**	**9.9**	827J/ 1.3=**636**	**77**	**19**	6NJ	**46**	60NJ	**40**	**430**	**28**	570J/ 10=**57**

Table 3
October and November 1992 SI Sediment Sample Results
Documenting the Presence of Hazardous Substances in Evaporation Ponds 1 and 2
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for significantly above background)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
E-19 (BG)	Carlson Creek (0.5 mile NE of site)	6.3	1.6U	11.3	0.16UJ	49.2	2U	2U	2U	2LNJ	2LNJ	1LNJ	5U	1LJ	46U
E-13	Evap Pond 1	12.6	**3.6**	**942**	1.7J	**490**	38NJ	20NJ	4U	14	76	31	**74**	4U	75U
E-14	Evap Pond 2	5	1.4U	23.5	0.43J	60.8	2UJ	2UJ	2UJ	4UJ	1LJ	2LJ	4UJ	2UJ	42UJ
E-20	Evap Pond 2	**67**	14.6Jx 1=**14.6**	**1,930**	2.8	**5,490**	2U	2U	2U	33U	150	86	33NJ	6LJ	33U
E-21	Evap Pond 2	**52.6**	8.2UJ	**104**	2.3	**4820**	2U	2U	2U	14LJ	180	120	32LNJ	10LJ	33U

Table 4
October 1992 SI Soil Sample Results
Documenting the Presence of Hazardous Substances in Onsite Soil (former sedimentation ponds area)
(bold numbers represent unbiased data or corrected biased data that satisfy the requirements for significantly above background)

Sample ID	Sample Location	As (mg/kg)	Cd (mg/kg)	Cu	Hg (mg/kg)	Zn	a-BHC (μg/kg)	b-BHC (μg/kg)	Lindane (μg/kg)	Dieldrin (μg/kg)	DDD (μg/kg)	DDE (μg/kg	DDT (μg/kg)	gamma-chlordane (μg/kg)	Aroclor-1248 (μg/kg)
S-5 (BQ)	Adjacent to Hoffman Marsh (0.5 mile so. of site)	2.2LJ	1.2U	26.2Jx 1.1=28.8	0.12U	78.7Jx 1.3=102	2U	2U	2U	4U	4U	4U	4U	2U	39U
S-3	Former sedimenta-tion ponds area	9.0J/ 1.6=**5.6**	1.1U	37.9J/ 1.1=34.4	**0.11**	89.5J/ 1.3=68.8	2U	2U	2U	3LNJ	**10**	3LJ	**19**	2NJ	36U
S-4	"	5.5J/ 1.6=**3.4**	1.1U	27.7J/ 1.1=25.2	**0.13**	66.9J/ 1.3=51.5	2U	2U	2U	4U	4U	4U	1LJ	2U	37U